

**IV. REMARKS:****A. Concerns Relative to the Drawings:**

Examiner's Concern: The examiner expressed concerns relative to the drawings under 37 CFR 1.83(a), stating that the "drawings must show every feature of the invention specified in the claims" and, more particularly, indicating that the "diffuser outlet area and the diffuser inlet area are approximately equal" as appearing as a limit of certain claims is not shown in the drawings as filed.

Assignee's Response: In response, the Assignee first states that it appears that this concern is based on a misunderstanding of the limitation "wherein the diffuser outlet area and the diffuser inlet area are approximately equal". Yes, at first glance of, e.g., Fig. 9e, it certainly may seem that the diffuser inlet area and the diffuser outlet area cannot be equal because a cross-section of the flow path converges as flow travels radially outward. However, one must remember that the radius is increasing during this convergence, and the value of the outlet area (and the inlet area, for that matter) is, of course, dependent not only on a distance between the impelled fluid directing sides (18, 20), *but also on the radial distance that outlet (or inlet) area has from a fan axis of rotation*. Thus, an outlet area that is defined by fluid directing sides whose separation distance at outlet is less than at inlet (because of convergence of the sides) can indeed have an area that is equal to an inlet area. Stated another way, the area of vertical surfaces of a first cylinder standing on one end and having a first radius and a first height can indeed be equal to the area of vertical surfaces of a second cylinder standing on one end and having a second radius and a second height, where the second radius is greater than the first radius, even though the second height is less than the first height. Thus, the drawings as now existing in the application should indeed be adequate.

**B. Claim Objections:**

Examiner's Concerns: The examiner expressed concerns relative to claims 54 and 158 under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Assignee's Response:

Claim 54: In response, the Assignee points out that claim 54 does further limit the subject matter of claim 42 (the claim from which it depends) by limiting the fluid in the "step of accepting fluid into a centrifugal fan" to air. Indeed, the method of claim 42 could indeed be used to handle fluid other than air, including, as but one example, a gas such as pure oxygen.

Claim 158: In response, the Assignee has amended claim 158 to describe different subject matter.

C. Claim Rejections:

1. Concerns Under 35 USC §112:

- a) Examiner's Concerns: The examiner expressed concerns as to claims 3, 6, 42, 66, 118, 119, 120, 155 and 164 under 35 USC §112, first paragraph.

Assignee's Response:

Claims 3, 118, 120 and 164: As explained above, equal inlet and outlet areas are not inconsistent with a converging geometry.

Claims 6, 66, 119 and 155: Importantly in this regard, these claims, as amended, each have a limit relative to a "zero net velocity" (emphasis added). As to the subject matter of these claims, individual streamlines will indeed have a non-zero velocity during operation of the fan, but upon consideration of all referenced streamlines, as claimed,

such net velocity will be zero (recall that the term velocity includes speed and direction, and that vector addition is therefore to be used in calculating the net velocity). The examiner is referred to the paragraph appearing on page 21 from line 14 to line 23, and the text appearing from line 26 on page 34 through line 2 on page 35.

The Assignee indicates that it has amended certain parts of the specification and claims to correct a simple error and to clarify certain inventive subject matter by using the more technically accurate term "zero net velocity" instead of "net zero velocity". The term "zero net velocity" appears in the originally filed application (see text appearing from line 26 on page 34 through line 2 on page 35).

Claim 42: In response, the Assignee simply states that axial convergence does not necessarily cause an increase in fluid velocity, as explained above, and certainly does not necessarily cause an increase in tangential velocity.

b) Examiner's Concerns: The examiner expressed concerns as to claims 1-21, 48, 50, 57, 58, 59, 61, 62, 63, 98-127, 156 and 162 under 35 USC §112, second paragraph. The Examiner states that:

The claims are narrative in form and replete with indefinite and functional or operational language. The structure which goes to make up the device must be clearly and positively specified. The structure must be organized and correlated in such a manner as to present a complete operative device. The claim(s) must be in one sentence form only. Note the format of the claims in the patent(s) cited.

Office Action of 13 April 2005, page 4.

Assignee's Response: As a preliminary matter, the Assignee states that the examiner has cited Paragraph 7.34.15 of MPEP 706.03(d), which is appropriate in some *pro se* cases, but certainly not in this case. Regardless, the Assignee indicates, as follows, that, as to specific requirements of this paragraph, either the assignee has met them, or they are simply incorrect statements of the law. It appears that, as this paragraph is intended to address *pro se* drafted applications, it presents an overly simplified interpretation of the statutory

requirements, designed to encourage inexperienced patent claim drafters to redraft their claims in what some consider the easiest type of claim to understand – structurally limited apparatus. However, after entry of the preliminary amendment filed with the original application, no apparatus claims remain in the case.

The Assignee further explains that the claims are in one sentence form only, and the claims are not in narrative form. The Assignee requests that, as to the claims remaining in the application, the Examiner cites specifically those claims or limitations thereof that it finds concerning.

The Examiner has expressed concern that the claims are replete with indefinite and functional or operational language. In response, the Assignee indicates that, without making any admission as to whether any of the terms of limits of claims are functional, even if a term of limit of a claim is appropriately characterized as such, functional limitations are entirely acceptable. See MPEP 2173.05(g) and the law cited therein; see also MPEP 2173.01.

The Assignee contends that the claims, as originally drafted or amended herein, do indeed comport with 35 USC §112, second paragraph. As standards that the Assignee contends are relevant in determining whether a claim comports with 35 USC §112 in regard to definiteness, the Assignee cites MPEP §2173.02 (“Definiteness of claim language must be analyzed ... in light of: (A) The content of the particular application disclosure; (B) the teachings of the prior art; and (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.”) Instead of discussing every single limitation of every claim as to which the examiner has §112, second paragraph concerns, the Assignee requests that the examiner specify which limitations are concerning under the correct standard of MPEP §2173.02. It is Assignee’s contention that all claims and the limitations thereof are indeed definite, particularly in light of the “the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.”

c) Examiner’s Concern as to Claim 1 – Use of “Sufficiently”: The Examiner

expressed concern that the term "sufficiently" in claim 1 is a relative term that renders the claim indefinite. The examiner states that "the term 'sufficiently controlled' is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention."

Assignee's Response – Use of "Sufficiently" in Claim 1: The Assignee has amended claim 1 to delete the word "sufficiently" (in addition to amended dependent claims 13, 14, 15, 16 to delete its appearance in those claims). These amendments, however, are not to be construed as an admission by the Assignee as to the propriety of the examiner's concern, as the Assignee contends that the specification does provide a standard for ascertaining the requisite degree "sufficiently control" (see, e.g., p. 25, line 13 through page 26, line 4). Therefore, "one of ordinary skill in the art would understand what is claimed, in light of the specification" (see MPEP 2173.05(b)). These amendments are merely made as an expediency.

d) Examiner's Concern as to Claim 1 – Use of the term "a problem": The Examiner expressed concern that the term "a problem" renders the scope of the claim indefinite.

Assignee's Response – Use of the term "a problem": In response, the Assignee has amended claim 1 to delete the text "a problem related to" (in addition to deleting certain related text in each of claims 14, 16, 59, 61, 62, 98, 99, 100, 114 and 154). These amendments, however, are not to be construed as an admission by the Assignee as to the propriety of the examiner's concern, as the Assignee contends that the specification does define "a problem" adequately (see, e.g., p. 5, line 11 through line 16; and page 33, line 22-25, describing at least two problems related to recirculation – energy loss and reduction in static pressure as compared with what would be observed in the absence of recirculation). Therefore, "one of ordinary skill in the art would understand what is claimed, in light of the specification" (see MPEP 2173.05(b)). These amendments also are merely made as an expediency.

e) Examiner's Concern as to Use of "Smoothly" (claims 2, 48, 117 and 156): The Examiner expressed concern that the term "smoothly" is a relative term that renders the claim indefinite.

Assignee's Response – Use of the term "smoothly": In response, the Assignee has canceled claims 48 and 117, and amended claims 2 and 156 to describe different subject matter. Again, however, these amendments are made merely as an expediency, and are not to be construed as an admission by the Assignee as to the propriety of the examiner's concern. Indeed, the Assignee contends that there is support for the term smoothly in the specification as originally filed (see, e.g., Figs. 2 and 9a-e).

f) Examiner's Concern as to Claims 4, 50, 124 and 162: The Examiner expressed concern that these claims each recite the broad recitation "at least 70%", "at least 80%"; and "at least 85%", stating that "a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired." Office Action of 13 April 2005, page 5.

Assignee's Response: In response, the Assignee argues that the holding of the case cited by the examiner – *Ex parte Wu* – relates not to Markush claims, but instead to claims involving the use of the term "optionally" (note that MPEP 2173.05(h) delineates the two types of alternative limitations (Markush Groups in MPEP 2173.05(h) I and "Optionally" in MPEP 2173.05(h) III). But additional support for appropriateness of these claims, and their overlapping Markush groupings exists – MPEP 2173.05(h) states that "The use of Markush claims of diminishing scope should not, in itself, be considered a sufficient basis for objection to or rejection of claims.... Similarly, the double inclusion of an element by members of a Markush group is not, in itself, sufficient basis for objection to or rejection of claims." Thus, e.g., the inclusion of 84% in the first two members of the Markush group of claim 4 and 124 ("at least 70%" and "at least 80%") will not by itself render the claim improper. Double inclusion also can not, by itself, render Markush claims 50 and 162 indefinite.

g) Examiner's Concern as to Use of "optimally transforming" - Claim 57: The examiner expressed concern that the term "optimally" in claim 57 "renders the claim indefinite, and that the term optimally is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention." (see Office Action of 13 April, 2005, page 6).

Assignee's Response: The Assignee responds by pointing out that the term "optimally transforming" is clearly described in the specification (see, e.g., page 44 of the specification, lines 7-11). Thus, the specification does provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would be reasonably apprised of the scope of the invention.

h) Examiner's Concern as to use of "recirculation related problems" – Claims 58, 59, 61, 62 and 100: The Examiner expressed concern that such text renders the claim indefinite.

Assignee's Response: In response, and without making any admission as to the propriety of the examiner's concern, the Assignee has amended these claims to change the term "recirculation related problems" to merely "recirculation".

i) Examiner's Concern as to use of "problems related to recirculation" – Claims 58, 59, 61, 62 and 100: The Examiner expressed concern that such text renders the claim indefinite.

Assignee's Response: In response, and without making any admission as to the propriety of the examiner's concern, the Assignee has amended these claims to change the term "problems related to recirculation" to merely "recirculation".

j) Examiner's Antecedent Basis Concern as to Claim 107: The Examiner

expressed concern that "said step of establishing acoustical material" in line 2 of claim 107 has insufficient antecedent basis.

Assignee's Response: In response, the Assignee has amended claim 107 to depend from claim 106 instead of from claim 98.

2. Concerns Under 35 USC 102:

Examiner's Concerns: The Examiner expressed 35 USC §102 concerns as to claims 1-10, 13-16, 18, 20, 42-52, 54-55, 57-66, 98-105, 107-109, 111-120, 122, 124-126, 154-164 and 176-177 in view of US Pat. No. 5,143,514 (hereinafter "Adachi '514"), and claims 1-6, 9-11, 13-16, 18-19, 42-44, 47-55, 57-66, 68-69, 98-101, 104-109, 111-120, 122-126 and 154-164 in view of US Pat. No. 2, 987,983 ("Solzman '983").

Assignee's Response: In response, the Assignee explains that the claims have been amended herein to clarify ways in which the claimed subject matter is different from Adachi. All amended claims are novel relative to each Adachi '514 and Solzman '983 at least in that neither reference discloses discharge to a *plenum*.

As to Adachi '514, the Examiner states that Adachi '514 discloses a plenum, referring to 4 of Adachi '514. However, 4 of Adachi '514 is a scroll, not a plenum, (see, e.g., line 59 of column 3 of Adachi '514) and the two terms are understood in the relevant art to refer to distinct, mutually exclusive elements. Further, all claims are limited relative to a centrifugal fan, and Adachi '514 discloses a compressor, not a fan. Additionally, Adachi does not disclose "flow turning", although the claims have been amended to include a limit relative to same.

Solzman '983 discloses discharge to the atmosphere, not discharge to a plenum (as but one of several ways in which it does not disclose claimed subject matter), in addition to including no disclosure relative to increasing static pressure with a diffuser.

3. Concerns Under 35 USC 103:

a) Examiner's Concerns: The Examiner expressed 35 USC §103 concerns as to claims 12, 56 and 110 as based on Adachi '514 and further in view of a design choice.

Assignee's Response: In response, the Assignee explains that the claims are not obvious for the following reasons:

The Pending Claims as Amended are Not Prima Facie Obvious: Assignee first submits that the claims remaining in the application after entry of the amendments made herein are not *prima facie* obvious, as they must be in order to support a 35 USC §103 rejection. As the Examiner is well aware, “[T]he examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.” MPEP 2142. The MPEP goes on to state that “To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.” MPEP 2143, Basic Requirements of a *Prima Facie* Case of Obviousness. Assignee submits that these three criteria can not be met with respect to the 35 U.S.C §103 and explains its position as follows:

(1) The Prior Art Reference Does Not Teach or Suggest All Claim Limitations of the Pending Claims:

The reference upon which the examiner relies for this §103 concern – Adachi '514 – simply does not disclose all of the limits of the independent claims (please see explanation above as to Adachi '514 in response to the examiner's 35 USC §102 concerns). Adachi '514 discloses neither a plenum, flow turning, nor a centrifugal fan – all of which relate to limits of each of the claims as amended herein. It therefore does not disclose all of the limits of the claims that depend from these independent claims as any claims depending from a non-

obvious claim are themselves non-obvious. The Examiner's argument that the missing elements are "design choice" simply does not meet the requirements that the Office must meet for claims to be *prima facie* obvious.

(2) There is No Motivation or Suggestion To Modify the Reference:

The Examiner has provided no indication as to motivation or suggestion "either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." MPEP 2143. This requirement must also be met for the Office to be able to reject a claim as obvious.

(3) There is no Reasonable Expectation of Success of the Inventive Subject Matter As Described in the Pending Claims:

Simply, the Assignee submits that there is not any evidence suggesting a modification or combination to generate the subject matter of any of the claims would be successful.

b) Examiner's Concerns: The Examiner expressed 35 USC §103 concerns as to claims 21, 70, 127, 165 and 178 as based on Adachi '514 and further in view of US Pat. No. 3,140,042 (Fuji '042).

Assignee's Response: In response, the Assignee explains that the claims are not obvious for the following reasons:

The Pending Claims as Amended are Not Prima Facie Obvious: Assignee first submits that the claims remaining in the application after entry of the amendments made herein are not *prima facie* obvious, as they must be in order to support a 35 USC §103 rejection (please see general discussion above relative to the requisite elements of *prima facie* obviousness under MPEP 2142 and 2143). Assignee submits that these three criteria can not be met as to claims 21, 70, 127, 165 and 178 as based on Adachi '514 and Fuji '042 and explains as follows:

The prior art references do not teach or suggest all claim limitations of the pending claims. The references upon which the examiner relies for this §103 concern – Adachi '514 and Fuji '042 – simply do not, either alone or in combination, disclose all of the limits of the independent claims. As but one limit of the amended claims not disclosed by either reference, Assignee would cite those limits regarding “flow turning”. It therefore does not disclose all of the limits of the claims that depend from these independent claims as any claims depending from a non-obvious claim are themselves non-obvious. Respectfully, the Assignee would indicate that instead of disclosing a centrifugal fan as the examiner states (see office action of April 13, 2005, page 9), Adachi '514 discloses a compressor.

Further, there is no motivation or suggestion to modify the reference, nor is there any reasonable expectation of success of the inventive subject matter as described in the pending claims; again, each of these is a requirement that the Office must meet in order that it may issue a valid obviousness rejection.

Further Remarks: It should be understood that the amendments made herein are made for tangential issues of clarity and as a matter of the Office's convenience or expedience only. The amendments should not be interpreted as an action that in any way surrenders a particular equivalency, surrenders any patent coverage, surrenders any right to patent coverage, restricts the scope of protection intended, or otherwise limits any rights which the applicant may now or hereafter assert. It should be understood that, unless and to the extent deemed broadened by this amendment, and even as amended, the applicant expressly reserves all rights, including but not limited to: all rights to maintain the scope of literal coverage with respect to any element as may have existed under the language previously presented, all rights to maintain the scope of equivalency coverage as may have existed under the language previously presented, and all rights to re-present the prior language at any time in this or any subsequent application. To the extent currently foreseeable, no change or reduction in direct or equivalency coverage is believed to exist, and no change or reduction in direct or equivalency coverage is intended through the presentation of this amendment.

**V. CONCLUSION:**

The Assignee has amended the specification description and certain claims in response to the office action of April 13, 2005, leaving claims 1-7, 11-21, 42-46, 50-70, 98-103, 106-116, 118-127, 154-165, 176-178 and 181-182 remaining in the application at this time. An allowance of all remaining claims is requested at the Examiner's earliest convenience.

Dated this 15<sup>th</sup> day of August, 2005.

Respectfully Submitted,  
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